

can probably only accelerate to a slight extent. In this conclusion I am naturally excepting "courtship" flight, which is usually of an accelerated nature.

I also find, after eliminating abnormal conditions and observations based on meagre evidence, that the normal and migratory rate of flight in miles per hour is as follows:—

Corvidæ	31-45	Starlings	38-49
Smaller Passeres.	20-37	Falcons.....	40-48
Geese	42-55	Ducks	44-59
Tame Pigeons ...	30-36	Sand-Grouse ...	43-47
Waders 34-51, but mostly from 40-51.			

XIII.—*Field Notes on the Birds of Lower Egypt.* By W. RAW, M.B.O.U. *With Contributions by Colonel R. SPARROW, C.M.G., D.S.O., M.B.O.U., and the Rev. F. C. R. JOURDAIN, M.A., M.B.O.U.*

FROM August 1915 until April 1919 I was resident at the Wireless Station of Abu Zabal. The village of that name is situated some twenty miles north-east of Cairo, and my quarters were a further mile in the same direction, right on the Cairo-Ismailia canal, where it skirts the edge of the desert. Thus I had easy access to the cultivation, desert, and palm-groves, while some two hundred acres of useful swamps (known as the Birket Accrashi) were within half-an-hour's walk. The locality was therefore ideal for ornithological observation.

Throughout my stay I kept a daily diary, and the following notes are culled from its pages. I endeavoured to secure as much information on the breeding birds of Egypt as I could, and for the purpose of putting my observations and other information on record, I propose to include all my oological data in this paper, although much of it was secured outside the six-mile area included in the Abu Zabal district. Due reference will be made to such divergence.

To my friend Mr. J. Lewis Bouhote, M.A., F.L.S., F.Z.S.,

M.B.O.U., I am deeply indebted for much kindly assistance in many ways. His thorough knowledge of the Birds of Egypt, his genial hospitality, and advice were ever at my disposal, and I shall always associate him with any success which fell to my lot. Mr. M. J. Nicoll, M.B.O.U., and Captain S. S. Flower, F.L.S., M.B.O.U., of the Egyptian Zoological Service, also rendered me many kindnesses which I gratefully acknowledge.

I must also pay tribute to Lieut. D. Paton, Major P. H. Manson-Bahr, D.S.O., M.B.O.U., Captain W. Shipton, M.B.O.U., Captain W. Bigger, M.C., M.B.O.U., Major F. W. Borman, M.B.O.U., Lieut. D. W. Musselwhite, M.B.O.U., and Dr. Beven, all of whom assisted me in many ways, and in whose company much of my work was done.

The Rev. F. C. R. Jourdain, M.A., M.B.O.U., has kindly revised the nomenclature and furnished the list of literature.

The supplementary notes in square brackets on the breeding of Egyptian birds are from observations made by Col. Sparrow in the years 1893-94, 1908-09, and refer with few exceptions to the Delta or the desert bordering it. As these notes agree closely with my own, it was not thought necessary to confirm my observations in all cases, but his remarks are confined to those instances in which additional information was available or some divergence of habits noted.

The nomenclature adopted is that of the International Rules, and in the main we have followed Hartert's 'Vögel pal. Fauna,' with some necessary modifications.

The order followed is that of this work, and a list of the principal notes and papers on the Ornithology of Lower Egypt is also appended. It is not intended to be exhaustive, and only those papers which are likely to be useful to British ornithologists and are readily accessible are included:—

1859. E. Cavendish Taylor. *Ibis*, pp. 41-55. Ornithological Reminiscences of Egypt.
 1860. „ „ „ *Ibis*, p. 199 (Corrections).
 1861. J. Cavafy. *Ibis*, p. 210 (Letter on *Budytes cinereo-capillus* and *Chettusia leucura*).

1862. S. Stafford Allen. Ibis, pp. 357-361. Notes on the Birds of Egypt.
1863. „ „ Ibis, pp. 32-34, 156-7. Notes on the Birds of Egypt.
- „ „ „ Ibis, pp. 363-4 (Letter on *Cuculus glandarius*). Idem by J. H. Cochrane (pp. 361-3).
1864. „ „ Ibis, pp. 97-8. On *Acrocephalus stentorius* (pl. I.). *T. c.* pp. 233-243. Remarks on Dr. A. L. Adams's Notes and Observations on the Birds of Egypt and Nubia.
- „ A. Leith Adams. Ibis, pp. 1-36. Notes and Observations on the Birds of Egypt and Nubia.
- „ J. H. Cochrane. Ibis, pp. 183-184. Note on the Nesting of the Lanner Falcon (pl. IV.).
1867. E. Cavendish Taylor. Ibis, pp. 48-73. Egypt revisited.
- 1869-74. T. v. Heuglin. Ornithologie Nordost-Afrikas. 2 vols. Cassel.
1870. R. B. Sharpe. Ibis, pp. 421-435. Critical Remarks on Dr. v. Heuglin's "Ornithologie N.O.-Afrikas."
- „ G. E. Shelley. Ibis, pp. 149-150, 445-448 (Letters on *Elanus caeruleus* and *Cypselus pallidus*, etc.).
1871. „ „ Ibis, pp. 38-54, 131-147, 309-319. Contributions to the Ornithology of Egypt.
1872. „ „ A Handbook to the Birds of Egypt. London.
1874. T. v. Heuglin. J. f. O. pp. 46-54. Bericht über "A Handbook to the Birds of Egypt."
1876. J. H. Gurney. Rambles of a Naturalist in Egypt and other Countries [pp. 84-245]. London, n.d.
1878. E. Cavendish Taylor. Ibis, pp. 368-374. A few additional Notes on Birds of Egypt.
1886. „ „ Ibis, pp. 378-380 (Letter on visit to Egypt).
1889. Crown Prince Rudolf of Austria (transl. by C. G. Danford). Notes on Sport and Ornithology (pp. 229 etc., 503 etc.). London.
1891. E. Cavendish Taylor. Ibis, pp. 473-475 (Letter on 6th visit to Egypt).
1892. G. Schrader. Orn. Jahrb. pp. 41-54. Ornitholog. Beobachtungen auf meinen Sammelreisen. V.
1896. E. Cavendish Taylor. Ibis, pp. 477-482. A few Notes on Birds of Egypt from observations made at Cairo, etc.
1905. W. L. S. Loat. Ibis, pp. 452-461. On a small collection of Birds from the Wadi-en Natrûn.
1906. „ „ Ibis, pp. 113-124. On a small collection of Birds from the vicinity of Lake Menzaleh.

1907. A. Koenig. J. f. O. pp. 59-91. Die Geier Aegyptens. T. c. pp. 391-469, 549-582, Die Falconiden Aegyptens.
1908. M. J. Nicoll. Ibis, pp. 490-510. Contributions to the Ornithology of Egypt, No. 1. Lake Menzaleh.
1909. " " Ibis, pp. 285-302, 471-484, 623-649. Contributions to the Ornithology of Egypt, No. 2. Birds of the Province of Giza (3 parts).
1909. C. Whympers. Egyptian Birds for the most part seen in the Nile Valley. London.
1912. C. B. Ticehurst. Zool. pp. 41-59. The Birds of Lower Egypt.
- " M. J. Nicoll. Ibis, pp. 405-453. Contributions to the Ornithology of Egypt, No. 3. The Birds of the Wadi Natron.
- " H. Lynes. Ibis, pp. 121-187. Field Notes on a Collection of Birds from the Mediterranean [*partim*].
1917. A. W. Boyd. Ibis, pp. 539-557. Birds of the Suez Canal Zone and Sinai Peninsula.
1918. S. S. Flower and M. J. Nicoll. The Principal Species of Birds protected by Law in Egypt. Cairo.
1919. M. J. Nicoll. Hand List of the Birds of Egypt. Pub. No. 29. Cairo.
1919. A. Koenig. J. f. O. pp. 431-485. Die Sperrschnabler (Fissirostres) Aegyptens.

For lists of earlier works on this subject see Ornithologie Nordost-Afrikas, Bd. I. pp. xcvi-viii.

F. C. R. JOURDAIN.

1. *Corvus corax umbrinus*. Brown-necked Raven.

Abu Zabal was not a suitable place for these birds, but I occasionally saw them there. A family party would often appear in June, and stray birds at different times during the year. I found a clutch of four eggs in a nest on a cliff in the Moqattam Hills on 2 April, 1918, and another clutch was taken by a native, in my presence, from a nest on a rocky scarp near the Pyramids on 28 March, 1918. Captain W. Bigger found fresh eggs in a well on the Suez road on 12 March, and another well-incubated clutch in the Moqattam Hills on 21 April. He also found fresh eggs at Luxor on 22 February, 1917.

[This bird was quite common between Ne Fiché and Suez on 3 August, 1919. My dates for full clutches of four eggs each near Abbassia are 20 April, 1894, and 19 April, 1910. Three eggs from Luxor were taken 27 March, 1909. Most of these eggs are paler than those of the Hooded Crow.—R. S.]

[The small size of the eggs of this race as compared with those of other forms of Raven is remarkable. Average of 17 Egyptian eggs: 44.49×31.58 mm. British eggs average 49.8×33.5 mm. Some eggs have a very pronounced blue ground, while others are barely distinguishable from the paler type of Hooded Crow's egg.—F. C. R. J.]

2. *Corvus cornix cornix*. Hooded Crow.

Common and resident. One bird made a hobby of flying off with stray tennis-balls from our court, and quickly ruined them. Begins to breed early in March, and I have found eggs as late as 6 June. Five is the largest number of eggs found in any nest.

[My earliest date for eggs is 7 March, 1909 (2 fresh eggs at Helouan). In the Fayûm I found fresh eggs on 29 and 30 March, 1910. Four is the normal clutch, but I have twice taken five. Eggs vary from almost pure blue to the ordinary type.—R. S.]

3. *Sturnus vulgaris* subsp.? Starling.

Although this bird was common during the winter months I appear to have omitted to secure any specimen at Abu Zabal, and cannot say definitely which subspecies those seen belonged to. One obtained at Tanûa el Fayûm in February 1919 was identified as *S. v. poltaratskyi*.

4. *Oriolus oriolus oriolus*. Golden Oriole.

This species passes through Abu Zabal about the first week in May and again in late September, but is never very numerous.

5. *Chloris chloris* subsp.? Greenfinch.

Observed on one occasion only. This was a single bird seen in an apricot-orchard on 16 February, 1916.

6. *Carduelis carduelis*. Goldfinch.

Uncommon at Abu Zabal. I saw a pair near there on 20 April, 1916, and several times during the winter near Shebin-el-Qanater. Mr. M. J. Nicoll showed me a nest, on which the bird was sitting, in a tree overhanging the tram-lines outside the Zoological Gardens at Giza, on 6 March, 1917.

[Mr. Nicoll showed me a nest with eggs in the Giza Gardens on 24 April, 1910.—R. S.]

7. *Carduelis cannabina mediterranea*. Linnet.

Large flocks haunt the stubble-fields throughout the winter, usually arriving in mid-October and departing in March or April.

8. *Serinus canarius serinus*. Serin Finch.

A flock of from thirty to fifty spent the winter annually in some tall trees near my quarters, arriving early in November and departing early in March.

9. *Erythrospiza githaginea githaginea*. Desert Bullfinch.

[This species was common at Luxor in December 1909, and most probably breeds in the neighbourhood.—R. S.]

10. *Fringilla cœlebs cœlebs*. Chaffinch.

Small parties were met with during the winter months, being most numerous during January and February.

11. *Passer domesticus niloticus*. Egyptian House-Sparrow.

Abundant throughout the year. Breeds from early April to late June. There is a great range of variation in the eggs. I obtained three sets of five eggs and took another containing six, but four were more common.

[In the Fayûm I took many clutches on 28 March, 1910, and at Luxor on 31 March. My earliest date for Abbassia is 21 March, 1909. Four appears to be the normal clutch, but I have one set of six from the Fayûm.—R. S.]

12. *Passer hispaniolensis hispaniolensis*. Spanish Sparrow.

Huge flocks winter at Abu Zabal, roosting in the reed-beds.

13. *Sporæginthus amandava*. Amaduvade Finch.

This species is not, of course, indigenous, but now breeds wild in the gardens at Giza, and is numerous at the Barrage over the Nile. It appears to be spreading, and breeds regularly at Inchas, where I have seen young just out of the nest. I took several clutches of eggs at the Barrage on 14 August, 1917. All were fours except one, which had five eggs.

14. *Emberiza calandra calandra*. Corn-Bunting.

A common winter visitor, large numbers roosting in the reed-beds. Remains as late as 5 April.

15. *Emberzia hortulana*. Ortolan.

Passes through Abu Zabal on both migrations, being most numerous about mid-September and rarer in mid-April.

16. *Emberzia cæsia*. Cretzschmar's Bunting.

Seen as early as 27 August, and is more numerous than the preceding species in autumn and also in spring.

17. *Calandrella brachydactyla brachydactyla*. Short-toed Lark.

During some winters this species winters at Abu Zabal, when it is to be seen in large flocks. Other years it passes through in October, and returns in March on its way north. I saw an Italian "sportsman" shoot no fewer than twenty-eight at a single discharge.

18. *Calandrella brachydactyla longipennis*. Long-winged Short-toed Lark.

I have shot specimens of this bird out of flocks of the preceding subspecies, and the remarks on it are applicable to this also.

19. *Ammomanes deserti isabellina*. Desert-Lark.

Messrs. Bahr, Bigger, and Borman caught some young birds of this species which had just flown, on 22 April, 1919, in the Moqattam Hills near Abbassia.

[I only found the nest of this species on one occasion—on 16 May, 1910—and, unfortunately, the bird deserted. The nest was on a rocky ridge not far from the Moqattam Hills, and was placed on the ground between some flat rocks, the edge of the nest being surrounded by small stones. Young a few days old were observed on 25 May, 1910, and a fully-fledged young bird on 28 May. This species was common in the Wady Hof on 5 May, 1909, but appeared not to have then laid.—R. S.]

20. *Ammomanes phœnicurus arenicolor*. Gould's Desert Lark.

[I observed this bird near Abbassia in January and February, 1910. Mr. Nicoll obtained a fully-fledged young bird in the Wadi Natrûn on 25 May, 1910.—R. S.]

21-24. *Galerida cristata nigricans*, *altirostris*, *mœritica*, and *caroli*. Egyptian Crested Larks.

Common and resident. Abu Zabal appears to have both *G. c. nigricans* and *G. c. altirostris*, and I have frequently observed what appeared to be birds referable to both subspecies obviously paired. The latter lighter type was more numerous. I have specimens of both forms shot at the same place. They breed from the first week in April until the end of May, but on one occasion I saw young birds on the wing on 10 April.

I found eggs of *G. c. mœritica* in the Fayûm Province on 14 March, 1917, and saw *G. c. caroli* feeding young in the Wadi Natrûn in mid-May, 1918. I never found more than four eggs in a nest, and usually only three, but Mr. J. L. Bonhote found a five clutch near the coast.

[*G. c. nigricans*. My earliest date is for two eggs at Abu Roash on 22.iii.09; my latest date for several clutches is Inchas 29.v.19. Three appears to be the normal clutch, though I have two clutches of four. There is great variation between different clutches.

G. c. mœritica. One egg fresh near Lake Qarûn, 30.iii.10; two clutches of two hard-set, 31.iii.10.—R. S.]

25. *Alauda arvensis arvensis*. Skylark.

Occasionally observed in small parties in winter. Usually feeding in the growing corn. Two shot on 16 October, 1916.

26. *Alæmon alaudipes alaudipes*. Bifasciated Lark.

First seen on 27 August, 1916, when I shot a pair of young birds. On 4 August, 1917, I shot another immature bird. From October until February inclusive, in the winter of 1917-18, five or six birds were daily observed from the windows of my quarters, feeding on the desert scrub, but did not appear to breed anywhere near.

[The bird was not uncommon in the desert in April and June, 1894, and odd birds were observed in February and November, 1909. I do not think it breeds near Cairo. I am indebted to Mr. Nicoll for two fresh eggs taken in the Wadi Natrûn on 6. vi. 10 by M. Balboni, which closely resemble the eggs of *Lanius e. elegans*, but are more elongated.—R. S.]

27. *Anthus richardi richardi*. Richard's Pipit.

Met with only once, when I saw Mr. J. L. Bonhote shoot a specimen whilst snipe-shooting on the Birket Accrashi on 26 January, 1917.

28. *Anthus campestris campestris*. Tawny Pipit.

Numerous during both migrations passing through Abu Zabal in September-October and March-April. Single birds met with in December.

29. *Anthus trivialis trivialis*. Tree-Pipit.

Uncommon and rarely obtained. One shot on 11-17 October, and another on 16-18 April.

30. *Anthus pratensis*. Meadow-Pipit.

Rarely observed. A specimen shot on 9 February, 1917.

31. *Anthus cervinus*. Red-throated Pipit.

Very abundant throughout the winter, arriving about mid-October and departing about the end of April.

32. *Anthus spinoietta coutellii*. Alpine Pipit.

Only less numerous than the preceding species, with which it arrives and departs. Roosts in the reed-beds and in the long grass bordering swamps.

33. *Motacilla flava flava*. Blue-headed Yellow Wagtail.

This species was noted several times during the autumn migration in September. Large numbers of Yellow Wagtails congregated on the reeds in the Birket Accrashi during September, but the majority were birds of the year, and difficult to identify—even when shot.

I am not certain, but think that *M. f. cinereocapilla* occurred amongst them. Less numerous in spring.

34. *Motacilla flava pygmæa*. Egyptian Yellow Wagtail.

Numerous throughout the year, but becomes scarcer in the breeding-season at Abu Zabal. Numbers breed, however, at Marg and Inchas, but I never found their eggs myself. I have, however, a clutch of four eggs of this species taken by Dr. Beven of Cairo, near the Pyramids, on 19 April, 1918.

[The full clutch of this race appears to be four eggs. My dates for fresh eggs are 28 April, 1894, and 10 April, 1910. Fully-fledged young 14 April, 1909. Nests commonly in the cultivation, especially near the Pyramids.—R. S.]

35. *Motacilla flava melanocephala*. Black-headed Yellow Wagtail.

Seen in the spring only. Large numbers were observed at the Birket Accrashi on 13 April, 1918, when I obtained several which were perched high up in a Lebak-tree.

36. *Motacilla cinerea cinerea*? Grey Wagtail.

Observed singly and sparingly during the winter months.

37. *Motacilla alba alba*. White Wagtail.

Large numbers of these birds winter at Abu Zabal, arriving early in October, and departing about the middle

of April. From two marked birds I was able to satisfy myself that they spend the winter in a particular place and do not wander far. I obtained an albino specimen in 1919.

38. *Lanius minor*. Lesser Grey Shrike.

I only met with a single specimen in Egypt, which I shot at Abu Zabal on 29 April, 1918.

39. *Lanius excubitor elegans*. Pallid Shrike.

This bird was not uncommon at Abu Zabal during most of the year, but disappeared during the breeding-season. One which wintered near my quarters in 1916-17 got extremely tame, but departed in March.

Through the kindness of Lieut. D. W. Musselwhite I was able to get a good insight into the breeding habits of this bird whilst staying with him at Kantara during the latter part of April 1919, and secured several sets of eggs.

As this officer is publishing his own notes on this species I will confine myself to quoting his earliest and latest dates for eggs, viz., 2 March-12 June.

[*L. e. elegans* is a fairly common breeding species in low thorn bushes between Mahsama-Abu-Sueir. My dates are as follows:—On 6.iii.10, 4 fresh eggs, 1 fledged young; also 6 new nests and 3 building. On 27.iii.10 5 fresh eggs and an incomplete clutch of 3. In the Fayûm a nest with eggs much incubated was found early in February. It is evident all birds nest earlier in the Fayûm than in the Delta.—R. S.]

40. *Lanius senator niloticus*. Woodchat Shrike.

Observed regularly but sparingly in spring and autumn, passing through from 29 March to 7 May, and from 15 August to the end of September. All those obtained were referable to this form, and none to *L. s. senator*.

41. *Lanius nubicus*. Nubian Shrike.

Not uncommon during both migrations. Specimens shot on 13 September and 16 April, which dates are about the usual times of their passing.

42. *Lanius collurio*. Red-backed Shrike.

From 10 August to 20 September numbers pass through Abu Zabal, being more numerous some years than others. Rarely observed in spring.

43. *Pycnonotus barbatus arsinöë*. White-vented Bulbul.

I saw newly-fledged young birds being fed by the parents in the gardens at the Barrage on 14 August, 1918, and had two old nests pointed out to me by Mr. Marr. One was in a creeper on the side of his house. I believe it breeds at Palais de Koabeh.

[This Bulbul was common at Abbassia and at other places in the Fayûm in 1909, and undoubtedly breeds there, probably from March to May.—R. S.]

[Eggs of this species are extremely rare in collections from Egypt, but I have one clutch of five eggs taken by Major P. E. Vaughan near Cairo.—F. C. R. J.]

44. *Muscicapa striata striata*. Spotted Flycatcher.

A regular bird on passage, being very numerous during some springs from the second week in April until as late as 23 May. In the autumn this species occurs between the middle of September and 19 October.

45. *Muscicapa hypoleuca hypoleuca*. Pied Flycatcher.

Less numerous than the preceding species, but observed in both spring and autumn.

46. *Muscicapa albicollaris*. White-collared Flycatcher.

Rarely seen for certain. Several observed and one shot on 6 May, 1918.

47. *Phylloscopus collybita collybita*. Chiffchaff.

Very numerous throughout the winter months, arriving in October and departing in March.

48. *Phylloscopus collybita albietinus*. Eastern Chiffchaff.

Amongst the Chiffchaffs there was a sprinkling of birds with quite a different call-note. I have compared specimens

at the British Museum, and refer them to the above subspecies.

49. *Phylloscopus trochilus*. Willow-Warbler.
Numerous in spring, but less so in the autumn.

50. *Phylloscopus bonelli*. Bonelli's Warbler.
Seen occasionally feeding in the sount-trees in both spring and autumn. Specimens obtained.

51. *Phylloscopus sibilatrix sibilatrix*. Wood-Warbler.
Observed only in the spring except a single specimen seen on 11 September, 1917. Abu Zabal was not an ideal spot for observing the autumn migration, as I am certain many species rested near the coast and passed over Abu Zabal in the next lap of their journey.

[*Phylloscopus s. erlangeri*? Erlanger's Wood-Warbler.
On 17 April, 1916, I saw a bird which I believe was referable to this subspecies. It was in my garden, but I did not shoot it as I had hopes of trapping it alive.]

52. *Locustella luscinioides luscinioides*. Savi's Warbler.
Large numbers were observed roosting in the reed beds of the old canal in April 1917.

53. *Acrocephalus arundinaceus*. European Great Reed-Warbler.
I believe this species may occur at Abu Zabal, although I never secured one there. I did, however, shoot a specimen at Inchas, not far distant, in the spring of 1918.

54. *Acrocephalus stentoreus stentoreus*. Clamorous Reed-Warbler.
Common and resident in the reed-beds on the Birket Accrashi. I found the eggs of this bird on 11 May, 1916. Some were 75 per cent. incubated, others fresh, and I found several uncompleted nests on the same day. Fresh eggs and young birds were also observed in the Wadi Natrûn late in May 1918.

[Four eggs in the Fayûm and three at Inchas appear to be the normal clutch; I never found five. At Lake Qarûn in the Fayûm I took two fresh clutches of four on 30. iii. 10.

At Inchas the beginning of June is the best time for fresh clutches, though I took fresh eggs between 28. iv. 09 and 27. vi. 09, but clutches of three taken on 15. v. 09 and 6. vi. 09 were slightly and very much incubated.—R. S.]

55. *Acrocephalus scirpaceus scirpaceus*. Common Reed-Warbler.

On 10 March, 1916, I picked up a Reed-Warbler which had been injured by flying against our aerial wires. Also observed in the vicinity of the Birket Accrashî in April, and again in early September.

56. *Acrocephalus schœnobæus*. Sedge-Warbler.

Common during both migrations. Several were observed so late in the spring—May—that I thought they must be breeding, but I never found any trace of nesting, and they subsequently disappeared, to return sometimes as early as 14 August.

57. *Hypolais pallida pallida*. Olivaceous Warbler.

Very common from the end of March until the end of August. Numbers breed at Abu Zabal, commencing to build soon after their arrival. As building-sites they usually select lime, orange or tangerine trees, but I found several in geranium bushes with the nest neatly built into a fork about two feet from the ground. Two broods are reared in a season, the second about the end of June; but I have occasionally found young birds still in the nest as late as the second week in August. Two to three is the usual clutch, and I only once found one of four. I have two sets of very pink eggs taken at Abu Zabal on 9. vi. 16 and 13. v. 16.

[The normal clutch consists of three eggs: only one set of four observed. 10 May is the usual date for fresh eggs.—R. S.]

58. *Hypolais rama*. Sykes's Warbler.

I shot a specimen at Inchas on 30 September, 1917, which Mr. M. J. Nicoll refers to this species. It is in the Giza collection. Although closely resembling the preceding species, I thought its note differed; and, moreover, it was late for *H. p. pallida* to be seen.

59. *Sylvia atricapilla*. Blackcap Warbler.

Seen sparingly in early spring. A specimen shot on 10 March. Never observed in autumn.

60. *Sylvia communis communis*. Common Whitethroat.

Common during the spring, migration being most numerous in mid-April. Observed but rarely in September.

61. *Sylvia curruca curruca*. Lesser Whitethroat.

Abundant in the spring. Usually first observed about 16 February. Not uncommon in September.

62. *Sylvia rueppelli*. Rueppell's Warbler.

Common at Abu Zabal from 8 March to mid-April. Rarely observed in autumn.

63. *Sylvia melanocephala melanocephala*. Sardinian Warbler.

Several obtained. One caught alive on 23 March, 1916. Also shot on 25 February, 1917, and in September.

64. *Sylvia melanocephala momus*. Bowman's Warbler.

The only specimen I met with was one which I shot at Abu Zabal on 30 October, 1918.

65. *Sylvia melanocephala norrisæ*. Nicoll's Warbler.

I secured a single addled egg from a nest containing three young of this species on 21 March, 1917. The nest was built in a tamarisk bush on the small island in Lake Qarûn, Fayûm, and was about two and a half feet from the ground. The nest was well built, and something like that of the Greenfinch, but smaller, and a quantity of old fish-netting was used in the outside structure. The young were just about to fly when the nest was discovered by

Captain W. Shipton, who observed the birds haunting the bush whilst he was laid up waiting for ducks to flight. The female of this subspecies is of a very skulking disposition and extremely difficult to obtain in the tamarisk thickets. I succeeded in shooting two females and several males, and also another young bird just on the wing.

Apart from this locality, I also met with these birds near the Moeris Hotel, on the opposite shore of Lake Qarûn; and, on a subsequent visit, found it common at the eastern end of the lake, where I secured further specimens. I believe it to be fairly numerous in suitable places around the lake; but I never met with it at Tamiya or elsewhere in the Fayûm Province. The egg is very similar to some types of the Common Whitethroat, being greenish and closely spotted.

[I can confirm Mr. Raw's notes on this species, as I obtained a young bird unable to fly, and found several old nests of the year on an island in Lake Qarûn on 29. iii. 10. I also found a new nest without eggs. The nests I saw were chiefly composed of the stems of tamarisk bushes. —R. S.]

66. *Sylvia cantillans albistriata*. Subalpine Warbler.

Observed sparingly in early spring from 15 March to 12 April. Never identified in the autumn.

67. *Agrobates galactotes galactotes*. Rufous Warbler.

This, our only real song-bird, arrives towards the end of March, and is abundant and tame until the end of August. Two broods are raised annually, and dwarf date-palms are frequently selected to build in, although heaps of rubbish and clumps of prickly pears are also much resorted to. The middle of May is usually the time for the first full clutches, and I have found fresh eggs on 18 June. Two to three is normally all that one finds in a clutch, but some years sets of four are more common. Major F. W. Borman found clutches of five not uncommon farther north, near Lake Borollos, in June 1918. It also breeds in the Wadi Natrûn

in May. I once found fresh eggs of this species in a House-Sparrow's nest, eight feet from the ground, in an orange-tree. Nothing had apparently been added to the sparrow's nest by the Rufous Warblers. I had previously taken the eggs of both pairs of birds.

[In 1909-10 I found four eggs the normal clutch for first layings, and May 10 the best date for fresh eggs. In the Fayûm a nest had four fresh eggs on 5 May, 1910.—R. S.]

68. *Scotocerca inquieta inquieta*. Scrub-Warbler.

Although not occurring at Abu Zabal, where the desert is too void of rocks and bushes to suit its requirements, I found this species breeding in the Wadi Hof, about twenty miles south of Cairo, and it also occurs in the wadis behind the citadel. Mr. M. J. Nicoll has found eggs in the Wadi Hof as early as the first of March, and Major J. W. Borman found them there, I think, equally early. I, however, found one full clutch of five fresh eggs, one of four, and a single egg in the same place on 24 March, 1918. Several nests were then seen, yet unfinished.

This bird is very tame whilst breeding, and the male has a pleasing song. The nest, which resembles that of a Long-tailed Tit minus the lichen trimmings, is lined with feathers, pieces of string, or soft rag, and is to be found in the largest of the bushes which find an existence in the bottom of the wadi. The nest is usually about two feet from the ground, and not well concealed,

[In the Wadi Hof I found two nests with one and two fresh eggs respectively on 13 March, 1910, and another with four hard-set eggs on 6 April, 1910. One nest was lined entirely with Woodcocks' feathers, probably collected from a dead migrant.—R. S.]

69. *Prinia gracilis gracilis*. Fayûm Graceful Warbler.

This species does not occur at Abu Zabal, but I secured its eggs in the Fayûm, where it is abundant, on 14 March, 1917. The nest, eggs, and habits differ in no way from the two following subspecies.

70. *Prinia gracilis deltæ*. Delta Graceful Warbler.

This bird is common and resident at Abu Zabal, where I found its eggs, usually about the beginning of March; but they continue to breed throughout the spring, and I have seen young birds in the nest as late as 14 August. Tamarisk bushes, small palms, sont bushes, and creepers like honeysuckle are the usual building-sites for the nest, which is generally built of grasses and lined and decorated with pieces of raw cotton.

[The nest of this bird is entered by a hole in the side, near the top. The usual clutch consists of 3 or 4 eggs, and I never met with 5. April and May appear to be the principal breeding months. — R. S.]

71. *Prinia gracilis natronensis*. Natrûn Graceful Warbler.

I secured the eggs of this subspecies in the Wadi Natrûn late in May, 1918. Beyond one very deep red clutch of eggs I saw no difference in the nest, eggs, or habits from the preceding race.

72. *Cisticola cisticola cisticola*. Fantail Warbler.

Common and resident. I found the eggs of this species as early as 19 February and as late as early June, but April is the month when they are most numerous. My collection contains a wonderful variety of types, ranging from pure white through red-spotted on a white ground to Linnet- and even Thrush-like types, whilst the only five clutch I found consisted of eggs similar to those of the Spotted Flycatcher in colour. Two to four appears to be the normal number of eggs in a clutch. The nest is beautifully built and resembles the type of purse which is provided with a string to draw tight the mouth. It is usually built in the rank grass which borders the fields and canals, and is generally fairly near the ground. Occasionally a clump of rushes or other herbage surrounded by water is selected. Many nests are destroyed by the natives, who burn the grass to destroy locusts, etc. Another peculiarity of this species is its habit of building more than one nest, for no apparent reason, in

close proximity to one another. Should the first clutch be taken, it immediately utilizes one of these nests for the second laying. It never moves far, which I easily proved by observing the particular type laid by certain pairs.

I found one nest built in a stray clump of barley in a bean-field. The stems of the barley were neatly woven into the side of the nest. I gave this specimen to the Giza Museum.

[I have a five clutch of Blue Tit type taken at Inchas 30.iii.10. My earliest date for a clutch of three at Matarieh is 25.iii.09, and my latest 18.vi.1909. The majority of nests found at Inchas between the end of May and middle of June contained three eggs, but most likely there were several broods.—R. S.]

73. *Turdus pilaris*. Fieldfare.

Two seen at close range on 17 February, 1916*, were all I ever saw at Abu Zabal.

74. *Turdus philomelus philomelus*. Song-Thrush.

Observed every winter, usually singly, in the gardens or palm groves. Never seen later than mid-March.

75. *Turdus merula syriacus*. Blackbird.

Observed every winter in the gardens, corn-fields, and palm-groves. Five seen together on 10 February, 1916.

76. *Monticola saxatilis*. Rock-Thrush.

Fairly common during the first fortnight of April each year. I appear to have no record during autumn.

77. *Monticola solitarius transcaspicus*. Blue Rock-Thrush.

Passes through Abu Zabal between 10 March and 15 April, being generally seen perched on mud-walls, native houses, and old wells.

[* In Captain A. W. Boyd's paper in 'The Ibis,' 1917, p. 541, it is stated that *Turdus viscivorus* had not been previously recorded from Egypt. This is a mistake, as Schrader described it as an occasional visitor in hard winters as far back as 1892.—F. C. R. J.]

78. *Enanthe enanthe* subsp.? Common Wheatear.

Numerous both in spring and autumn. This species passes through from late March until late in May, and during the month of September.

I have not yet examined my skins of this bird, so cannot say to which form they belong. I have frequently seen many birds sitting in the sott-trees, in the shade of a branch, gaping with the heat, at which time they are easy to approach, and are readily caught in a net-trap baited with a mealworm.

79. *Enanthe deserti deserti*. Desert Wheatear.

Seen occasionally throughout the year. A brood of young birds usually appeared during August, but I never discovered the nest. Frequently observed perching on trees. Adult males are commoner during the latter part of April. An immature bird shot on 8 August, 1917, had a large green tick adhering to its eyelid.

80. *Enanthe deserti albifrons*. Eastern Desert Wheatear.

In, I think, March 1917, I shot an adult male, which Mr. M. J. Nicoll referred to *E. d. atrogularis* (= *albifrons*). I later (8-15 March, 1919) shot other birds which appeared to belong to this form when compared with *E. d. deserti*; but one of them, which Dr. Hartert kindly examined, is believed by him to be referable to the latter form. As I have no more of my skins by me I must leave the question in this unsatisfactory condition.

81. *Enanthe hispanica xanthomelæna*. Eastern Black-throated Wheatear.

Both Black-throated and Black-eared forms of this species pass through the Abu Zabal on both migrations somewhat later than the Common Wheatear, the male being earlier than the female in each case.

82. *Enanthe leucomela cypriaca*. Eastern Pied Wheatear.

On 5 November, 1919, I shot the first authenticated specimen of this species in Egypt. The skin is in the Giza

Museum. It was an adult male, and I tried in vain to secure another male which haunted the rocky bed of an old canal for several days about the same time. This species must have been overlooked, for on 1 November, 1918, I shot another adult male, and during the succeeding week I saw upwards of a dozen and shot several, which are in my collection and that of Mr. J. L. Bonhote. All the specimens shot and seen were males, and, although I kept a good lookout, I never saw a single female.

83. *Ænanthe melanoleuca finschii*. Arabian Chat.

A female shot on 12 February, 1917, and three males during November, 1918, were all I met with at Abu Zabal.

84. *Ænanthe isabellina*. Isabelline Wheatear.

Winters at Abu Zabal, arriving towards the end of August and departing in April. None remain to breed. Very quarrelsome; a wounded bird is invariably set upon and killed by others of the same species.

85. *Ænanthe lugens lugens*. Mourning Chat.

Occasionally seen during the winter, and a brood of young, together with their parents, annually appeared on a piece of waste ground during August. Lack of suitable rocky retreats probably accounts for their scarcity at Abu Zabal.

Captain W. Bigger found young birds out of the nest on 28 April, and a pair building on 2 June, 1917, in a wadi behind the Citadel, Cairo.

I had intended to devote some time to this family in the spring of 1919, but the riots unfortunately upset my arrangements.

[Although I never found a nest with young or eggs, I saw and shot birds which were evidently breeding in the Wadi Hof near Helwan on 5.v.09, and found old nests in holes in the rocky sides of small valleys, presumably of this species.—R. S.]

86. *Enanthe leucopyga*. White-rumped Chat.

This bird undoubtedly breeds in the Wadi Hof, Wadi Resheid, Wadi el Dejla, and other suitable places. Messrs. Bahr, Bigger, and Borman found a nest containing young five days old on 22 April, 1919. This was built under a rock in the Moqattam Hills near Cairo, and contained four young birds.

[Old nests, presumed to be of this species, were also found in the Wadi Hof in May 1909, and on 6 April 1910. I shot a female with small ovary: the bird was very fat. Mr. Nicoll has also obtained young birds in the Wadi Hof, which were undoubtedly bred there. A series of eggs of the Egyptian Pied Chats is badly needed. It appears probable that first nests will be found in early March.—R. S.]

87. *Enanthe monacha*. Hooded Chat.

[This Chat was common at Luxor in December 1909, and a pair with three fledged young were observed in the Wadi Hof on 2. vi. 10.—R. S.]

88. *Saxicola rubetra rubetra*. Whinchat.

Seen sparingly in spring—late March to early May. Never observed in the autumn.

89. *Saxicola rubetra margaretæ*. Eastern Whinchat.

On 3 May, 1917, I shot a bird which Mr. M. J. Nicoll refers to this race. It is now in the Giza collection.

90. *Saxicola torquata rubicola*. Stonechat.

Stonechats appear about the second week in September and remain until the middle of March. None breed.

91. *Phœnicurus phœnicurus phœnicurus*. Common Redstart.

Observed in both spring and autumn; average dates 3 April and 8 September. Does not winter at Abu Zabal.

92. *Phœnicurus ochrurus gibraltariensis*. Black Redstart.

A pair or so winter at Abu Zabal, arriving in October. Latest record 15 March.

93. *Luscinia megarhyncha megarhyncha*. Nightingale.

Seen commonly in the crops when quail-shooting in April; also sparingly in the autumn. One heard singing 6 April, 1917.

94. *Luscinia suecica suecica*. Red-spotted Bluethroat.

Numbers winter at Abu Zabal. Frequently seen in the damper places when snipe-shooting, etc.; also frequents the herbage on the canal sides and the cotton-fields. Sometimes remains until May.

95. *Luscinia suecica volgæ*. White-spotted Bluethroat.

Less numerous than the above form, but obtained annually at the Birket Accrashi, where it may be found during the winter.

96. *Erithacus rubecula rubecula*. Robin.

A pair or so wintered every year in our garden. Very shy and retiring. Never observed later than 19 March.

97. *Hirundo rustica rustica*. European Swallow.

Numerous in spring and autumn. Observed as late as the end of May.

98. *Hirundo rustica savignii*. Egyptian Swallow.

Common and resident. Usually builds in native houses, under verandahs and railway bridges, and has been found by Major F. W. Borman in dug-outs on the Suez Canal. In the last week in April I saw a nest under a wharf on the Suez Canal within a few feet of the water. I have also seen nests in some of the busiest streets in Cairo, such as Mohamed Ali Street, just clear of the heads of pedestrians. The eggs are usually laid about the beginning of May, though sometimes earlier. There is considerable variation in the size of the eggs, some specimens being very small, and others as large as normal eggs of the European Swallow.

[My dates are—four eggs incubated 31. iii. 09; nests with eggs 21. iii. 94, 15. iv. 94; eggs and also young 8. vi. 1893—so it is evidently double- or treble-brooded. Four is the usual clutch.—R. S.]

99. *Hirundo daurica rufula*. Red-rumped Swallow.

Rarely observed at Abu Zabal, but on 1 May, 1917, a fair number of these birds were seen hawking for flies over the reed-beds at the Birket Accrashi.

100. *Delichon urbica urbica*? House-Martin.

Never very numerous, but observed at various times in spring and autumn. Six seen on 18 April, 1916.

101. *Riparia riparia riparia*. Sand-Martin.

This species passes through Abu Zabal in fair numbers, but is not readily distinguished from the following subspecies, and, in consequence, I am not certain of dates.

102. *Riparia riparia littoralis*. Shelley's Sand-Martin.

Abundant from the end of March throughout the summer, breeding in colonies in the sand-banks. One large colony had their nesting-holes in a sand-bank not more than eighteen inches high in a sand-pit near the Birket Accrashi. I took eggs there on 10 April, 1916, and had difficulty in finding a clutch of five. On 8 April, 1918, I found many nests containing five eggs. Major F. W. Borman showed me a thriving colony in some trenches at the School of Instruction close to a busy camp at Zeitoun.

[Very large colonies at Shubra Island and in both banks of the Nile between Rod-el-Farag and the Barrage. It also nests at Abbassia and at Abu Roash. I took many eggs between 18-22 March in 1909-10.—R. S.]

103. *Riparia obsoleta obsoleta*. Pale Crag-Martin.

Although this species was never observed at Abu Zabal it is not uncommon near the Citadel in Cairo and in the cliffs behind. I found a nest there in an old lime-kiln on 2 April, 1918, on which the bird was sitting. Owing to the position of the nest I was unable to investigate it. This species also breeds inside the domes of some of the houses in the main streets of Heliopolis, and I have seen them feeding young there in April. Captain W. Bigger found fresh eggs at Luxor on 19 February, 1917.

[The only eggs taken of this species were found in a building at Abbassia on 30 March, 1894; the clutch consisted of three, and the eggs are spotted with chestnut brown instead of red, and are easily distinguishable from the eggs of *H. r. savignii*.—R. S.]

104. *Apus murinus murinus*. Pallid Swift.

On 12 February, 1917, several were observed flying over the Birket Accrashi, where they were noted until 27 February. Single birds observed at various times of the year. I never identified the European Swift, but probably it also occurs. *A. m. murinus* was common near Lake Karûn in March 1917, and I shot several there.

[This bird is common at Cairo, and nests in the holes of walls in the mosques of the Tombs of the Khalifs. I took one clutch of fresh eggs on 1.iv.10, and found young fledged on 27. iv. 09.—R. S.]

105. *Caprimulgus europæus europæus*. European Nightjar.

The only specimen ever met with at Abu Zabal was shot on 18 April, 1919. I found *C. e. europæus* to be not uncommon near Lake Menzaleh in September 1916.

106. *Caprimulgus ægyptius ægyptius*. Egyptian Nightjar.

This species was occasionally seen and obtained at Abu Zabal. It is extremely abundant between 18 August and the end of September, when bunches of upwards of fifty annually appeared on some rough ground near my quarters. When walking over this place there seemed to be a Nightjar to every yard. Of four which I shot on 9 September, 1917, two were males and two females. They were deep in moult.

Major F. W. Borman and Lieut. D. W. Musselwhite found two pairs of eggs and shot a bird of this species on 29 May at Sidi Salem. The eggs were much incubated, and were laid under the shelter of a small bush close up to the roots, on some uncultivated ground.

[This species was common in the desert on 16.iii.09.—R. S.]

107. *Caprimulgus ægyptius saharæ*. Nightjar.

On 20 May, 1916, I shot a female which had well-defined incubation patches, at Abu Zabal. I never discovered eggs or young, but saw another adult on 25 May near the same place—the edge of the desert. In 1917 I again saw a pair of birds in the same locality on 30 May and 4 July. A systematic search, however, brought no luck. I shot other specimens, but appear to have mislaid the data, and the skins are in the collection of the Giza Museum or that of Mr. J. L. Bonhote.

[A pair shot on 25. v. 10 at Gattah had their reproductive organs very much developed, but I failed to obtain any eggs.—R. S.]

108. *Merops apiaster*. European Bee-eater.

Large numbers pass through Abu Zabal during both migrations. Average dates 9 April and mid-September. These birds roost in the same clumps of trees every year.

109. *Merops persicus persicus*. Blue-cheeked Bee-eater.

Large straggling flocks annually pass over Abu Zabal, sometimes at a great height and somewhat earlier than the preceding species. It breeds at Inchas in fair numbers, and I have taken full clutches there on 12 May, which date is very consistent.

[This Bee-eater also breeds between Farash-hour and Damietta; also between Abu Hammad and Mahsama.]

In 1904 Mr. Malcolm took fresh eggs between 2–25 May.

At Inchas on 12. v. 09 I dug out several nest-holes, but the birds had not laid. The last week in May is apparently the time for full clutches, which range from four to six.—R. S.]

110. *Merops orientalis cleopatra*. Green Bee-eater.

Five seen on 17 October in the garden at Abu Zabal is the only record I have for that place. It is, however, fairly numerous round Cairo in the winter, and breeds no farther south than Mazghouna, where I took fresh eggs on 27 April, 1918. It is interesting to note that I found an addled egg of the previous year in amongst a fresh clutch, thus showing that the same hole is sometimes used again as a nesting-site. Some of their holes were on quite flat open

ground, but the majority were amongst prickly pears in little sand-pits. Five appears to be the full clutch.

[Mr. H. Malcolm took a clutch of seven eggs at Damietta on 16 April, and fresh eggs at Minieh on 6. v. 04.

At Mazghouna I took clutches of 6, 5, 5, slightly incubated, on 4. v. 10, and found two fresh eggs and one nest in which the birds had not yet laid.—R. S.]

111. *Upupa epops epops*. European Hoopoe.

This subspecies occurs annually, but owing to its great resemblance to the next on the list its dates of arrival and departure are hard to judge.

I have obtained it several times during the winter months, and have observed it well out on the desert, obviously migrating in April.

112. *Upupa epops major* Brehm. Brehm's Hoopoe.

Common and resident. I took a clutch of six fresh eggs out of a hole 20 feet up in the wall of our engine-house on 3 March, 1917. Other dates are: C/4, 10 April, 1916; C/6, 3 May, 1917; and C/7, C/7 at Inchas, 12 May, 1918.

This bird uses many sites for depositing its eggs, and I never found any nesting material in their filthy holes.

I quote a few sites which came under my observation:—Hole inside native hut, hole in a tree, old nesting-hole of the Pied Kingfisher nearly flush with water in a deep canal, firebox of old obsolete oven which was leaning against a wall, drain-pipe carrying water off a roof, and high up under the eaves of our engine-house, where presumably the same pair raised three broods in 1918. Hoopoes were again breeding there when I left in April 1919.

[The hole in a wall or under the eaves of a native house seems to be the usual site of nest. My dates for eggs are: Luxor, six fresh and three hard-set, 18. iii. 10; Inchas, six fresh, three fresh, on 30. iii. 10. At Inchas on 29. v. 09 I found seven young fourteen days old and five young ten days old; also four fresh eggs on 27. vi. 09, and it is evidently double- or treble-brooded.—R. S.]

[To be continued.]